DOCUMENT RESUME

ED 077 980 TM 002 790

TITLE	[Computer Program PEDAGE -- SLEXTF-M2-F4.]
INSTITUTION	Toronto Univ. (Ontario). Dept. of Geology.
PUB DATE	18 Jan 66
NOTE	11p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Computer Programs; *Data Processing; *Input Output; *Test Construction
IDENTIFIERS	*PEDAGE System

ABSTRACT

The SLEXTF-M2 computer program, written in FORTRAN IV, is used for examinations using binomial or polynomial response, i.e., true/false or multiple choice. The subject matter of any one statement is coded by a string of descriptive words that indicate categories. These words are arranged in left-to-right order such that any one descriptor defines a subclass of the class defined by the descriptor to its left. Tests showed that usually six or seven descriptors would normally be sufficient to define the class of a statement, and in this program, a set of ten is invariant, but some on the right may be blank. The data deck contains a random number between -1.0 and +1.0, a title for the output, a list of 24 control descriptors for limiting the selection, the mean and tolerance limit of difficulty of the statements to be selected, the number to be selected, the number of statements from which selection is to be made, and the number of sets to be selected. After an initial screening of the statements for possible selection, examination sets are selected. The first page of output contains the title, a general instruction, and the first 27 statements. The second and third pages contain the next statements, up to 27 per page. This program is invariant in assuming that 81 is the maximum number of statements that will be required. The fourth page of the output contains a string of T and F symbols in three rows of 27 each, corresponding to the logical values of the selected statements. Also, the last random number used is printed, and this can be the starting number in the next use of the program. (For related documents, see TM 002 778, 789, 791-793.) (DB)

ED 077980

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UNIVERSITY OF TORONTO
TORONTO, ONTARIO
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TM 002 790

Information on computer programs of the PEDAGE system, for use in scoring and analyzing methods of teaching and examining knowledge of factual material.

SLEXTF-M2-F4

January 18, 1966

FILMED FROM BEST AVAILABLE COPY

University of Toronto
Department of Geology

Computer Program SLEXTF-M2

Written in FORTRAN IV source language by F.G. Smith

For IBM 7094-II computer under IBSYS monitor control.

Conforms to current conventions of the Institute of Computer Science, University of Toronto.

Purpose. For examinations using binomial or polynomial response (i.e. true/false, or multiple choice), the instructor must select a subset of statements from the set of all possible statements about the concepts, hypotheses, and facts involved in the courses of study. The subjective nature of this selection, combined with semantic problems in each statement, need not be listed for the difficulties to be appreciated. In addition, if supplementary examinations are necessary, other sets of statements, logically equivalent to some prior set, must be selected, and this is extremely difficult to do properly. Therefore, utilization of a computer for selecting subsets of statements is a natural development of examination procedures.

We have not made a search for computer programs of selection that may be available. Undoubtedly they are being developed and used at other institutions and perhaps in another decade the coding systems may be standardized. To speed up our use of such programs, we set up a new code that is general enough to be transformed to another and better one in the future. Our strategy is to do the best we can now and not to waste effort in attempting to predict the future.

Subject coding. The subject matter of any one statement is coded by a string of descriptive words that indicate categories. These words are arranged in left-to-right order such that any one descriptor defines a subclass of the class defined by the descriptor to its left. In other words, the descriptors are words read left-to-right, the second one modifying the first, the third modifying the second, and so on. Thus a string of descriptive words for coding a statement about crevasses in alpine glaciers, discussed in chapter 8 in a textbook by Eardley for a first course in general physical geology, could be assigned as follows:

geology, physical, general, first course, Eardley, chapter 8, glaciers, alpine, crevasses in.

In the FORTRAN language, alphabetical characters can be stored and manipulated in units of six, so that the first six letters of each descriptor would be a natural choice. However, when these are densely packed, such as on a data card, they cannot easily be distinguished for visual checking. Therefore, a leading blank followed by the first five letters of each descriptor was adopted

as the coding method. An exception is numerical data, such as chapter numbers, which are right-registered in the five places and the first letters of the descriptor are put in left-registered. As an example, the above string of descriptors would be coded as follows:

GEOLO PHYIC GENER FIRST EARDL CHAP8 GLACIE ALPIN CREVA

Tests showed that usually six or seven descriptors would normally be sufficient to define the class of a statement, and in this program a set of ten is invariant, but some on the right may be blank. Thus the string of descriptors can be put in the first 60 columns of one card, leaving room for other data. In this program, the estimated value of difficulty of the statement and the logical value (true or false) are inserted in the following two fields of six columns each.

Statements. The statements are not coded in any way, and are punched into two consecutive data cards in the first 72 columns. All blanks are coded by the machine, so that any statement terminating on the first card must be followed by a blank card. Indentation of the text on the second card is optional. Also, any key-punch character can be used in the text, including a decimal point for a period.

Method. The data deck contains a random number between -1.0 and +1.0, a title for the output, a list of 24 control descriptors for limiting the selection, the mean and tolerance limit of difficulty of the statements to be selected, the number to be selected, the number of statements from which selection is to be made, and the number of sets to be selected. These are read and stored before reading the triplet of cards for each statement as outlined above.

Each statement is read in sequence, and its descriptors are compared with the control descriptors. If a match is found, the index number of that statement is stored for later selection. The sense of matching is as follows:

1) if any of the first four descriptors are not the same (in either order or spelling) then the statement is rejected;

2) if any of the next six descriptors of the statement (excluding blanks) do not appear anywhere in the next twenty control descriptors, then the statement is rejected;

3) otherwise, the statement is accepted for possible selection.

After this first screening, examination sets are selected, provided the total is more than twice the number required. The random number provided in the data is used to generate a sequence of random numbers which are changed to a sequence of index numbers of the stored list. These in turn give the index numbers in the initial list of statements, which are prepared for output printing. The first page of output contains the title, a general instruction, and the first 27 statements. The second and third pages contain

the next statements, up to 27 per page. This program is invariant in assuming that 81 is the maximum number of statements that will be required.

The fourth page of the output contains a string of T and F symbols in three rows of 27 each, corresponding to the logical values of the selected statements. Also, the last random number used is printed, and this can be the starting number in the next use of the program.

Program. A copy of the FORTRAN IV program is shown on following pages, also a listing of the binary deck of the object program derived from this, inserted in a typical program deck. Only the first six of the statements in the data deck are shown.

Typical output of the program is shown in the last four pages.

Data deck. In more detail, the data deck is composed of cards with the following formats:

Card 1, format (F12.8), a starting random number with a decimal point;

Card 2, format (12A6), title of the examination;

Cards 3 and 4, format (12A6), descriptors to control the selection of statements;

Card 5, format (2F6.4), index of difficulty and tolerance, as estimated fraction of the class that will answer it correctly, and estimated plus-or-minus limits of the estimate, each with a decimal point;

Card 6, format (3I6), number of statements per set, number of statements for selection, number of sets to be selected;

Card 7, format (10A6, F6.5, L6), descriptor sequence, estimated index of difficulty with a decimal point and true-or-false value;

Cards 8 and 9, format (12A6), statement that may be true or false;

Cards following, as cards 7, 8, and 9.

```
$IBFTC SLX2     DECK
C**PROGRAM SLEXTF-M2-F4
C**A PART OF THE PEDAGE SYSTEM  **
C**CODED BY F.G.SMITH, DEPT. GEOLOGY, UNIV. TORONTO, NOV. 1965.
      INTEGER BLANK
      LOGICAL TF,TFLIST,T
      DIMENSION KL(10),KLASS(24),S(24),STAT(24,800) ,NUMSAV(81),
     1 TITLE(12),TFLIST(800),T(81)
      DATA NULL,BLANK/0,6H      /
      READ(5,11) X
      READ(5,15) TITLE,KLASS
      READ(5,14) EASE,TOLER
      EASHI=EASE+TOLER
      EASLO=EASE-TOLER
      READ(5,12) NSLECT,NAVAIL,NSETS
      MIN=2*NSLECT
      M=NULL
      DO 200 N=1,NAVAIL
      READ(5,13) KL,E,TF,S
      DO 100 J=1,4
      IF(KL(J).NE.KLASS(J)) GO TO 200
  100 CONTINUE
      DO 130 L=5,10
      K=KL(L)
      IF(K.EQ.BLANK) GO TO 135
      DO 120 J=5,24
      IF(K.EQ.KLASS(J)) GO TO 130
  120 CONTINUE
      GO TO 200
  130 CONTINUE
  135 IF((E.GT.EASHI).OR.(E.LT.EASLO)) GO TO 200
      M=M+1
      TFLIST(M)=TF
      DO 140 J=1,24
      STAT(J,M)=S(J)
  140 CONTINUE
      IF(M.EQ.800) GO TO 210
  200 CONTINUE
  205 IF(M.LT.MIN) GO TO 400
  210 RM=M
      DO 375 NS=1,NSETS
      DO 220 N=1,NSLECT
      NUMSAV(N)=NULL
  220 CONTINUE
      DO 250 N=1,NSLECT
  225 X=RANDR(X)
      NUM=RM*ABS(X)+1.0
      DO 230 J=1,N
      IF(NUM.EQ.NUMSAV(J)) GO TO 225
  230 CONTINUE
      NUMSAV(N)=NUM
  250 CONTINUE
      WRITE(6,31) TITLE,NS
      WRITE(6,25)
      DO 300 N=1,NSLECT
      IF(N.EQ.28) WRITE(6,33)
      IF(N.EQ.55) WRITE(6,34)
      M=NUMSAV(N)
      T(N)=TFLIST(M)
      WRITE(6,23) N,(STAT(J,M),J=1,24)
```

```
300 CONTINUE
    WRITE(6,31) TITLE,NS
    WRITE(6,32)
    WRITE(6,24) (T(N),N=1,NSLECT)
375 CONTINUE
    WRITE(6,26) X
    WRITE(6,36)
    STOP
400 WRITE(6,35)
    STOP
 11 FORMAT(F12.8)
 12 FORMAT(3I6)
 13 FORMAT(10A6,F6.5,L6/12A6/12A6)
 14 FORMAT(2F6.4)
 15 FORMAT(12A6)
 23 FORMAT(1H1 ,I3,2X,12A6/6X,12A6)
 24 FORMAT(1H0,9X,27L2)
 25 FORMAT(1H0,5X,70HTHE FOLLOWING STATEMENTS ARE TO BE JUDGED TRUE OR
   1 FALSE BUT NOT BOTH.  // )
 26 FORMAT(1H0,66HSTARTING VALUE OF RANDOM NUMBER X FOR NEXT USE OF TH
   1IS PROGRAM IS F12.8)
 31 FORMAT(1H1,5X,12A6,I3)
 32 FORMAT(1H0,9X,16HCONTROL T/F LIST  ///)
 33 FORMAT(1H1,37X,3H-2- ///)
 34 FORMAT(1H1,37X,3H-3- ///)
 35 FORMAT(1H0,9X,42HTHERE ARE TOO FEW STATEMENTS FOR SELECTION  )
 36 FORMAT(1H1,8X,17HEND OF EXECUTION. )
    END
```

```
88*CARDS
```

```
$JOB  SMITH,F.G.      AP20-4 PEDAGE      2    10     SLEXTF-M2-F4
$IBJOB
$IBLDR SLX2                                                    12/01/65    SLX20000
$TEXT  SLX2                                                    12/01/65    SLX20001
*N (X($77*7V*7 5 -07(   07,PPP07(  9          9  7  7  8  =  U 6 P    7  -SLX20002
*N9)X(*7V*7V*7         (=WXPPZ(XZ--*((-=*$-7Y*XXPPZ-7ZX(--,---,-7Z0,*-.XPPSLX20003
*N8(((*7V*7V*7 Z0(*7((*))*)***))P*P**PG*P*XP)******)*1(P*PPPZ0(7***)****SLX20004
*N9)--*7V*7V*7 P(GG*P*XP*X)*P**PP(*(*P*PP-XPPZZ(*=*(7PZ0,*-()*)***(P**XPSLX20005
*N7PX(*7V*7V*7 ZZ,-,U7**XPPZZ,-,U7**XPPZ0,*8(((*(*)*****))P*X*)*(GPPPZZWSLX20006
*N-(--*2(*7(*P-*-(G*P***()P    74007V=L9 90 7(7-097,7--    74007X=L8 90 7(SLX20007
*N-7(,-7(*P(*P-   74+07(=L9 7( 7(   74+07(=L7  X 7(7--   74007X=L- 90 7XSLX20008
*N-,-1*X(*7(*7-7-097X7-097(7--47X67(97(47X=7(97(   74007X=L- 90 7(7-097\SLX20009
*N6Z(**X(*7X*X-7-097(7-097(7--77V27XE7(47(97X-7((X(G-7G6957(-7(   74007(SLX20010
*N=(*-*7X*X(*P-=L- 90 7X   74+07X=L-  ( 7(7-097(7-097,   74+07(=L5  X 7(SLX20011
*N=-)(*7(*7(*7-7--G5957X-7X45(85(37(5-=(X((XXG5-57(-7(45(97(47(87,C7X57XSLX20012
*N=(-$*7(*7(*7-G7-57X-7X47(87(C7(57((XX(G(5-=(X((P(47(87(37X77X47(87(37(SLX20013
*N7M()*7(*7X*7 77(5-=47X17(97X77X07(07977X47,9  77X7X(74 (*97-7G5945(95 SLX20014
*N-P*(*7(*7(*X ((-()947X87(C-=5--((707(47X87(3--7--5--47X- 6.8099-48+- 6SLX20015
*N-X()*7(*7(*7-69-97(-7(((7G-7-7V((-G-7-7V)(-G---7V((-G-7-7V((7G--G6957XSLX20016
*N-(((*7X*X(*7--7XG5947(97(((70--G5957(-7(   7400-7=L7 7,97,47,7 9-  77(SLX20017
*N5(),*7(*7(*7-67XF80) 6- 6E7(-7(((7G--G7957X-7X47(87(C-75-7((-0--47(97(SLX20018
*N-*)-*X(*((*X-((-0--   74-0--=L7 9+ 7(   7400--7=L- 7( 7(47X7-07-0   74-SLX20019
*N-(()*X(*7(*7-0-7=L- 9+ 7(7-0G5957(-7(47(87(C--   74-0-7=L- 9+ 7X7-047(SLX20020
*N-Z-**X(*7(*7-87(C--   74-0--=L- 9+ 7X7-047(97X77X0--0797--4  95U   74-SLX20021
*N7U(X*X(*P(*X-0--=L- 9+ 7(47(7-077X7X(74 (*77--G7947 7-0((-()-7-0((70--SLX20022
*N-(W(-7(*P(*(    74-0--=L- 9+ 7(   7400--=L7 7( 7(47X7-07-0   74-0--=L-SLX20023
*N-(((*XX*7(*7- 9+ 7(7-0   74-0--=L- 9+ 7(G5945U7-0((-0--7-0((70--   74-SLX20024
*N-X$X*X(-7(*( 0- -=L- 9+ 7(47,7-07-0   74-0-==L- 9+ 7(7-047(   7- 0--=L-SLX20025
*N7R(K-7(*(V*7    74-0-7=L- 9+ 7X7-047(   7- 0--=L-   *$P0-777 75 76 74 SLX20026
*K-X(**7(*7(X  ---G-0549   7--7-0G807--7--7--7--7-77 -57( --              SLX20027
$CDICT SLX2                                                    12/01/65    SLX20028
*N $(-=)- 1-*$P=E (((  --(X*-6 (*(-6 (GX-6 (**-6 (*)-6 (**-6 XD--  ()-    SLX20029
*N0N()(**-  XD--  (*)-  *7P-  *7P-  *7P-  *7P-  *,P-  *,P-  *,P-  *XP-    SLX20030
*18$***(P-  P*)-                                                           SLX20031
$DKEND SLX2                                                    12/01/65    SLX20032
$DATA
 0.721600425
GEOLOGY 116 TERM 1 TEST 7 CHAPTER 13 AND REVIEW DEC 16 1965
 GEOLO PHYSI GENER FIRST EARDL CHAP8 CHAP9 CHA10 CHA11 CHA12 CHA13

 0.5  0.2
   81   182     6
 GEOLO PHYSI GENER FIRST EARDL CHAP8                          0.5      T
MOUNTAIN RIVERS USUALLY HAVE GREATER EROSIONAL COMPETENCE THAN FLOOD-
   PLAIN RIVERS.
 GEOLO PHYSI GENER FIRST EARDL CHAP8                          0.5      F
IF ALL OTHER VARIABLES ARE CONSTANT, THE EROSIONAL CAPACITY OF A RIVER
   IS NOT AFFECTED BY CHANGES OF ITS RATE OF FLOW.
 GEOLO PHYSI GENER FIRST EARDL CHAP8                          0.5      T
RIVERS ARE THE BASE LEVEL OF EROSION OF THEIR OWN TRIBUTARIES.

 GEOLO PHYSI GENER FIRST EARDL CHAP8                          0.5      T
FLOOD PLAINS ARE NOT PRODUCED BY MEANDERING RIVERS THAT ARE ENTRENCHED.

 GEOLO PHYSI GENER FIRST EARDL CHAP8                          0.5      F
MEANDERING RIVERS RARELY HAVE NATURAL LEVEES.

 GEOLO PHYSI GENER FIRST EARDL CHAP8                          0.5      F
ALLUVIAL FANS ARE CLASSIFIED AS ONE KIND OF TALUS.
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GEOLOGY 116 TERM 1 TEST 7 CHAPTER 13 AND REVIEW DEC 16 1965 2

THE FOLLOWING STATEMENTS ARE TO BE JUDGED TRUE OR FALSE BUT NOT BOTH.

1 METEORIC WATER AND METEORITIC WATER ARE SYNONYMOUS TERMS.

2 DUST FROM A DESERT WINDSTORM IS NOT EXPECTED TO CONTAIN A DETECTABLE CONCENTRATION OF SOLUBLE SALTS

3 STALACTITES ARE THE PILLARS ATTACHED TO THE FLOOR, AND STALAGMITES ARE THE ICICLELIKE FORMS ATTACHED TO THE ROOF, IN LIMESTONE CAVES.

4 STRONG WINDS BLOWING TOWARD A SHORE RAISE THE AVERAGE LEVEL OF THE WATER AT THE SHORE.

5 IN HUMID CLIMATES, MATURE RIVER VALLEYS USUALLY ARE BOUNDED BY GENTLE SLOPES WITH VERY LITTLE IF ANY EXPOSED BEDROCK.

6 IF LESS SEDIMENT IS DEPOSITED THAN IS REMOVED AT A PLACE IN A RIVER COURSE, BRAIDED CHANNELS ARE EXPECTED TO FORM.

7 IF THE FRONT OF A VALLEY GLACIER IS RECEDING TO HIGHER LEVELS UP THE VALLEY, THEN THIS MEANS THAT THE FLOW OF ICE HAS STOPPED.

8 SALTS FORMED DURING CHEMICAL WEATHERING OF ROCKS OFTEN ARE REMOVED DURING WIND EROSION OF ARID REGIONS.

9 TERMINAL MORAINES AND MEDIAL MORAINES ARE SYNONYMOUS

10 THE UNDERTOW CURRENT MOVES FASTER THAN A RIP CURRENT DURING AN ON-SHORE WIND STORM.

11 BARCHAN DUNES AND PARABOLIC DUNES ARE SYNONYMOUS TERMS.

12 MUDDY WATER HAS A GREATER DENSITY THAN CLEAR WATER, IF BOTH HAVE THE SAME SALINITY.

13 EXPOSED BEDROCK NEAR VALLEY FLOORS IN ARID CLIMATES BECOMES SMOOTHED, AND SOMETIMES POLISHED, BY WIND ACTION.

14 THE EARTH ZONE OF LOW STRENGTH IN THE UPPER PART OF THE MANTLE IS CALLED THE MOHOROVICIC DISCONTINUITY.

15 THE FIRTHS OF SCOTLAND AND THE FIORDS OF NORWAY ARE ESSENTIALLY THE SAME KIND OF TOPOGRAPHICAL FORM.

16 SOME ROCKS THAT HAVE A HIGH PERMEABILITY HAVE NO POROSITY.

17 ALL RIVERS TEND TO BECOME GRADED, GIVEN ENOUGH TIME.

18 ALLUVIAL FANS ARE ANALOGOUS TO DELTAS BECAUSE BOTH HAVE DISTRIBUTIVE RIVER SYSTEMS.

19 SMALL ROCK BASINS CARVED BY ALPINE GLACIERS ARE CALLED BATHOLITHS.

20 IN SEVERE DUST STORMS, THE LARGEST PARTICLES 200 FEET ABOVE THE GROUND ARE AT LEAST OF SAND SIZE.

21 IN AREAS THAT ARE DEEPLY WEATHERED, THE LAKE LEVELS ARE ALSO THE WATER TABLE LEVELS.

22 VALLEY GLACIERS OCCUR ON SOME OF THE ARCTIC ISLANDS OF CANADA.

23 PIEDMONT GLACIERS ARE RELATED GENETICALLY TO VALLEY GLACIERS AND NOT TO CONTINENTAL GLACIERS

24 MOUNTAIN RIVERS USUALLY HAVE GREATER EROSIONAL COMPETENCE THAN FLOOD-PLAIN RIVERS.

25 THE SPEED OF FLOW OF RIVER WATER USUALLY DECREASES WITH INCREASE IN THE WIDTH OF THE RIVER.

26 EATHQUAKE S WAVES AND P WAVES TRAVEL THROUGH EARTH MATERIALS WITH THE SAME VELOCITY.

27 THE AVERAGE DENSITY OF THE EARTH IS NEARLY THE SAME, BUT SLIGHTLY SMALLER THAN, THE AVERAGE DENSITY OF CRUSTAL ROCKS.

28 BERGSCHRUND AND CREVASSE ARE SYNONYMOUS TERMS IN GLACIOLOGY.

29 MOST OF THE LONG INLETS ON THE COAST OF BRITISH COLUMBIA ARE CORRECTLY CLASSED AS FIORDS

30 JOINTING IS CHARACTERISTIC OF LIMESTONE AND DOLOMITE, BUT MOST ROCKS ARE NOT JOINTED.

31 MEASUREMENTS OF GLACIERS HAVE SHOWN THAT THE MEAN SURFACE TEMPERATURE OF THE EARTH HAS DECREASED IN THE LAST HUNDRED YEARS.

32 DREIKANTER WOULD NOT BE EXPECTED TO OCCUR ON A DESERT PAVEMENT

33 IT IS EXPECTED THAT SEDIMENTARY BEDS IN ALLUVIAL FANS WOULD BE CONTINUOUS OVER GREATER DISTANCES THAN IN DELTAS.

34 CLEAR RIVER WATER WILL FLOAT ON SEA WATER.

35 A LOESS IS A SHARP-CRESTED HILL BETWEEN TWO CIRQUES.

36 RAISED BEACHES ARE TYPICAL OF SHORELINES OF SUBMERGENCE.

37 MOST OF THE SODIUM CHLORIDE IN RIVER WATER IS DERIVED FROM RAIN WATER.

38 TRIBUTARY AND DISTRIBUTARY ARE USED AS ADJECTIVES TO INDICATE UNGRADED AND GRADED RIVERS, RESPECTIVELY.

39 THERE ARE TWO HIGH TIDES AND TWO LOW TIDES IN THE SEA EVERY 24 HOURS APPROXIMATELY.

40 A SEISMOGRAPH IS AN EARTHQUAKE STRONG ENOUGH TO BE DETECTED BY INSTRUMENTS.

41 METEORIC WATER IS THE NAME GIVEN TO WATER THAT IS GIVEN OFF DURING CRYSTALLIZATION OF IGNEOUS ROCKS.

42 PURE ICE SINKS IN CLEAR SEA WATER AT 0 DEGREES CENTIGRADE.

43 THE GULF OF ST.LAWRENCE IS CLASSED AS A DROWNED RIVER VALLEY.

44 DEPOSITS OF DRIFT ALONG THE SIDES OF GLACIATED VALLEYS ARE CORRECTLY CLASSIFIED AS LATERAL MORAINES

45 IF ALL OTHER VARIABLES ARE CONSTANT, THE EROSIONAL CAPACITY OF A RIVER IS NOT AFFECTED BY CHANGES OF ITS RATE OF FLOW.

46 THE CONCENTRATION OF CALCIUM SALTS IN AVERAGE RIVER WATER IS MORE THAN IN AVERAGE ARTESIAN WATER.

47 THE ICE CAP IN ANTARCTICA IS AN EXAMPLE OF A CONTINENTAL GLACIER

48 IN ARID CLIMATES, MATURE RIVER VALLEYS USUALLY ARE BOUNDED BY STEEP SLOPES WITH EXPOSED BEDROCK.

49 EROSION BY MOST RIVERS IS DUE MORE TO CHEMICAL SOLUTION THAN TO MECHANICAL ABRASION.

50 SOME STALACTITES IN LIMESTONE CAVERNS CONTAIN MINERALS.

51 IT IS A REASONABLE POSTULATE THAT SOME NATURAL ROCK BRIDGES IN ARID REGIONS ARE FORMED BY WIND EROSION.

52 EARTHQUAKE P(PRESSURE) WAVES IN ROCKS ARE ANALOGOUS TO SOUND WAVES IN AIR.

53 ANDESITE IS A TYPE OF ALPINE GLACIER COMMON IN SOUTH AMERICA

54 VALLEY GLACIERS ERODE CHARACTERISTIC V-SHAPED VALLEYS IN BEDROCK

55 BOTH VALLEY GLACIERS AND CONTINENTAL GLACIERS ARE KNOWN TO FORM TERMINAL MORAINES

56 RIVER TERRACES ARE MORE TYPICAL OF RIVERS IN AN OLD STAGE OF EROSION THAN OF RIVERS IN A YOUTHFUL STAGE OF EROSION.

57 WIND EROSION IN GENERAL IS FASTER IN HOT DRY CLIMATES THAN IN COLD DRY CLIMATES.

58 CIRQUES ARE ROUND TOPPED HILLS THAT HAVE BEEN GLACIATED

59 THE STEEPEST SLOPE OF A MOVING PARABOLIC DUNE IS ON THE LEE SIDE RELATIVE TO THE WIND DIRECTION

60 SOME METEORITES CONSIST PRINCIPALLY OF OLIVINE AND PYROXENE.

61 THE ICE CAP OF GREENLAND IS AN EXAMPLE OF A CONTINENTAL GLACIER

62 THE MATTERHORN IS A GOOD EXAMPLE OF A DREIKANTER

63 LACUSTRINE SEDIMENTS ARE SEDIMENTS THAT ARE DEPOSITED IN LAKES.

64 ESKERS ARE COMPOSED OF TILL

65 THE MOTION OF ANY ONE PARTICLE OF SURFACE WATER AS A WAVE PASSES IS NEARLY CIRCULAR.

66 ONE OF THE EARTHQUAKE ZONES OF THE EARTH CUTS ACROSS THE NORTHERN PART OF ONTARIO.

67 SMALL ELONGATED BASINS ERODED BY CONTINENTAL GLACIERS ARE CORRECTLY CALLED DRUMLINS

68 THE LOWER PART OF THE CRUST HAS THE PHYSICAL PROPERTIES OF BASALT OR GABBRO.

69 THE CANADIAN ARCTIC ISLANDS CONTAIN SNOWFIELDS BUT NO GLACIERS

70 SALTATION REFERS TO A PHYSICAL, RATHER THAN A CHEMICAL, PROCESS.

71 THE AVERAGE RATE OF CONTINENTAL DENUDATION BY EROSION IS CLOSER TO ONE FOOT IN 5000 YEARS THAN TO ONE FOOT IN 5000000 YEARS.

72 SURFACE WATER MOVES IN THE SAME DIRECTION AS THE WIND AND ABOUT AS FAST AS THE WAVE FORMS MOVE.

73 THE GENERAL DIRECTION OF AN ESKER IS PARALLEL TO THE ICE FRONT OF THE GLACIER AT THE TIME THE ESKER WAS FORMED

74 AVERAGE RIVER WATER CONTAINS A DETECTABLE CONCENTRATION OF SOLUBLE CHLORIDES.

75 ENTRENCHED MEANDERS MAY BE ONE OF THE EFFECTS OF A LOWERING OF THE BASE LEVEL OF EROSION IN A REGION.

76 THE THICKNESS OF CONTINENTAL GLACIERS RARELY EXCEEDS 500 FEET

77 MEANDERING RIVERS GENERALLY ARE GRADED RIVERS.

78 AVERAGE GROUND WATER OF WARM ARID AREAS CONTAINS A HIGHER CONCENTRATION OF SODIUM CHLORIDE THAN AVERAGE GROUND WATER OF WARM HUMID AREAS.

79 SEMI-ARID REGIONS THAT HAVE WATER TABLES NEAR THE SURFACE ARE CLASSED AS ANHYDRITES.

80 THE GRANITIC PART OF THE CRUST PROBABLY EXTENDS UNDER THE LARGE OCEANS AS WELL AS UNDER THE CONTINENTS.

81 ROCHES MOUTONNEES ARE STEEPER ON THE LEE SIDE RELATIVE TO THE DIRECTION OF MOVEMENT OF THE GLACIER THAT FORMS THEM

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